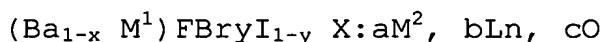


What is claimed is:

1. A method for producing a photostimulable phosphor represented by a following General Formula (1), comprising: subjecting phosphor particles in the photostimulable phosphor to a surface treatment by using a fluorine-containing compound after calcining the phosphor particles:

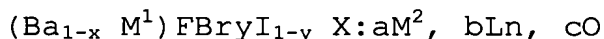
General Formula (1)



wherein  $\text{M}^1$  is at least one alkaline earth metal atom selected from Mg, Ca, Sr, Zn and Cd;  $\text{M}^2$  is at least one alkaline metal atom selected from Li, Na, K, Rb and Cs; X is at least one halogen atom selected from Cl, Br and I; Ln is at least one rare earth atom selected from Ce, Pr, Sm, Eu, Gd, Tb, Tm, Dy, Ho, Nd, Er and Yb; and x, y, a, b and c are numbers within the range of  $0 \leq x \leq 0.3$ ,  $0 \leq y \leq 0.3$ ,  $0 \leq a \leq 0.05$ ,  $0 < b \leq 0.2$  and  $0 < c \leq 0.1$ , respectively.

2. A method for producing a photostimulable phosphor represented by a following General Formula (1) in a liquid phase process, comprising: subjecting phosphor particles in the photostimulable phosphor to a surface treatment with a fluorine-containing compound after calcining the phosphor particles:

General Formula (1)



wherein  $\text{M}^1$  is at least one alkaline earth metal atom selected from Mg, Ca, Sr, Zn and Cd;  $\text{M}^2$  is at least one alkaline metal atom selected

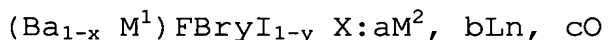
from Li, Na, K, Rb and Cs; X is at least one halogen atom selected from Cl, Br and I; Ln is at least one rare earth atom selected from Ce, Pr, Sm, Eu, Gd, Tb, Tm, Dy, Ho, Nd, Er and Yb; and x, y, a, b and c are numbers within the range of  $0 \leq x \leq 0.3$ ,  $0 \leq y \leq 0.3$ ,  $0 \leq a \leq 0.05$ ,  $0 < b \leq 0.2$  and  $0 < c \leq 0.1$ , respectively.

3. The method of claim 1, wherein the fluorine-containing compound is obtained from a coating composition prepared by dissolving a fluorine-containing polymer with a fluorinated solvent.

4. The method of claim 1, wherein the amount of the fluorine-containing compound is from 0.2 to 20% by mass based on the photostimulable phosphor.

5. A photostimulable phosphor produced by subjecting phosphor particles in the photostimulable phosphor represented by a following General Formula (1) to a surface treatment by using a fluorine-containing compound after calcining the phosphor particles:

General Formula (1)



wherein  $\text{M}^1$  is at least one alkaline earth metal atom selected from Mg, Ca, Sr, Zn and Cd;  $\text{M}^2$  is at least one alkaline metal atom selected from Li, Na, K, Rb and Cs; X is at least one halogen atom selected from Cl, Br and I; Ln is at least one rare earth atom selected from

Ce, Pr, Sm, Eu, Gd, Tb, Tm, Dy, Ho, Nd, Er and Yb; and x, y, a, b and c are numbers within the range of  $0 \leq x \leq 0.3$ ,  $0 \leq y \leq 0.3$ ,  $0 \leq a \leq 0.05$ ,  $0 < b \leq 0.2$  and  $0 < c \leq 0.1$ , respectively.

6. The photostimulable phosphor of claim 5, wherein the fluorine-containing compound is obtained from a coating composition prepared by dissolving a fluorine-containing polymer with a fluorinated solvent.

7. The photostimulable phosphor of claim 5, wherein the amount of the fluorine-containing compound is from 0.2 to 20% by mass based on the photostimulable phosphor.